

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the Application:

Claim 1-23 (Canceled).

Claim 24 (New): A process for depositing a thin film on a surface of a substrate, the process comprising:

introducing a vapor of a first material to the substrate wherein at least a portion of the vapor of the first material adsorbs on the surface of the substrate; then

introducing a vapor of a second material wherein the second material activates the first material to react and form the thin film on the surface of the substrate;

wherein the thin film comprises at least two elements and the thin film is substantially free of elements of the second material;

Claim 25 (New): The process of claim 24, further comprising:

removing at least a portion of the vapor of the first material that has not adsorbed on the substrate from the vicinity of the substrate before introducing the vapor of the second material; and

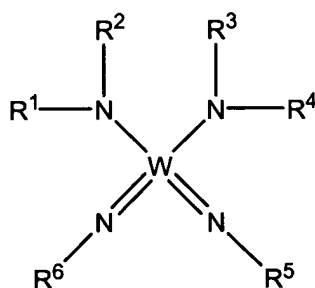
removing at least a portion of the vapor of the second material from the vicinity of the substrate.

Claim 26 (New): The process of claim 24, wherein the thin film comprises tungsten and nitrogen.

Claim 27 (New): The process of claim 24, wherein the first material comprises tungsten, molybdenum, or mixtures thereof.

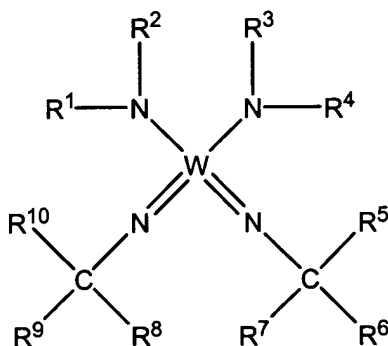
Claim 28 (New): The process of claim 24, wherein the first material comprises one or more compounds comprising tungsten-nitrogen bonds.

Claim 29 (New): The process of claim 28, wherein the one or more compounds comprising tungsten-nitrogen bonds have the general formula



in which R^n represents alkyl groups, arylalkyl groups, alkenylalkyl groups, alkynylalkyl groups, fluoroalkyl groups or alkyl groups substituted with other atoms or groups selected to enhance the volatility of the compound, where R^n is any one of R^1 through R^6 and where the R^n may be the same or different from each other.

Claim 30 (New): The process of claim 28, wherein the one or more compounds comprising tungsten-nitrogen bonds have the general formula



in which Rⁿ represents alkyl groups, arylalkyl groups, alkenylalkyl groups, alkynylalkyl groups, fluoroalkyl groups or alkyl groups substituted with other atoms or groups selected to enhance the volatility of the compound, where Rⁿ is any one of R¹ through R¹⁰ and where the Rⁿ may be the same or different from each other.

Claim 31 (New): The process of claim 30, wherein R¹ through R¹⁰ are methyl.

Claim 32 (New): The process as in claim 30 wherein R¹ and R⁴ through R¹⁰ are methyl and R² and R³ are ethyl.

Claim 33 (New): The process of claim 24, wherein the first material comprises one or more compounds comprising molybdenum-nitrogen bonds.

Claim 34 (New): The process of claim 24, wherein the second material comprises a Lewis base.

Claim 35 (New): The process of claim 34, wherein the Lewis base comprises ammonia.

Claim 36 (New): The process of claim 34, wherein the Lewis base comprises pyridine.

Claim 37 (New): The process of claim 24, wherein the second material comprises a hydrogen plasma.

Claim 38 (New): The process of claim 24, wherein the second material comprises at least one hydrogen atom.

Claim 39 (New): The process of claim 24, wherein the substrate is maintained at a temperature in the range of 200 °C to 400 °C.

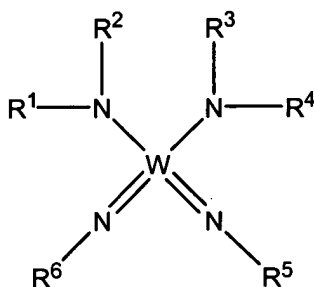
Claim 40 (New): A process for depositing a thin film on a surface of a substrate, the process comprising:

introducing a vapor of a first material and a vapor of a second material to the surface of the substrate; wherein

the first material comprises one or more compounds comprising a tungsten-nitrogen bond; and

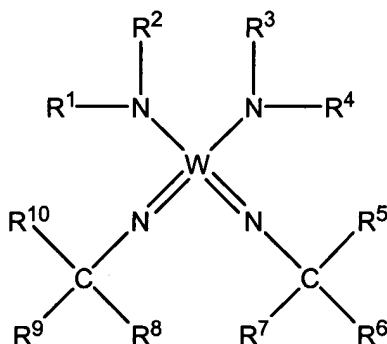
the second material comprises a Lewis base.

Claim 41 (New): The process of claim 40, wherein the one or more compounds comprising a tungsten-nitrogen bond have the general formula



in which Rⁿ represents alkyl groups, arylalkyl groups, alkenylalkyl groups, alkynylalkyl groups, fluoroalkyl groups or alkyl groups substituted with other atoms or groups selected to enhance the volatility of the compound, where Rⁿ is any one of R¹ through R⁶ and where the Rⁿ may be the same or different from each other.

Claim 42 (New): The process of claim 40, wherein the one or more compounds comprising tungsten-nitrogen bonds have the general formula



in which Rⁿ represents alkyl groups, arylalkyl groups, alkenylalkyl groups, alkynylalkyl groups, fluoroalkyl groups or alkyl groups substituted with other atoms or groups selected to enhance the volatility of the compound, where Rⁿ is any one of R¹ through R¹⁰ and where the Rⁿ may be the same or different from each other.

Claim 43 (New): The process of claim 42, wherein R¹ through R¹⁰ are methyl.

Claim 44 (New): The process as in claim 42 wherein R¹ and R⁴ through R¹⁰ are methyl and R² and R³ are ethyl.

Claim 45 (New): The process of claim 40, wherein the Lewis base comprises ammonia.

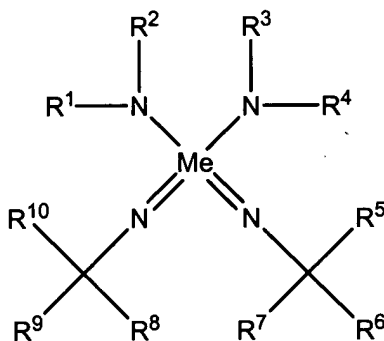
Claim 46 (New): The process of claim 40, wherein the Lewis base comprises pyridine.

Claim 47 (New): The process of claim 40, wherein the second material comprises a hydrogen plasma.

Claim 48 (New): The process of claim 40, wherein the second material comprises at least one hydrogen atom.

Claim 49 (New): The process of claim 40, wherein the substrate is maintained at a temperature in the range of 200 °C to 400 °C.

Claim 50 (New): A process for depositing a material, the process comprising:
introducing a compound having a formula



to a surface;

wherein Me is W or Mo, Rⁿ represent alkyl groups, arylalkyl groups, alkenylalkyl groups, alkynylalkyl groups, fluoroalkyl groups or alkyl groups substituted with other atoms or groups selected to enhance the volatility of the compound, where Rⁿ is any one of R¹ through R¹⁰ and the Rⁿ may be the same or different from each other.

Claim 51 (New): The process of claim 50, wherein Me is W.

Claim 52 (New): The process of claim 50, further comprising:

introducing a vapor of a second material, wherein

the compound comprises at least two elements of the deposited material; and

the deposited material is substantially free of elements of the second material.

Claim 53 (New): The process of claim 52, wherein the second material comprises a Lewis base.

Claim 54 (New): The process of claim 53, wherein the Lewis base comprises ammonia.

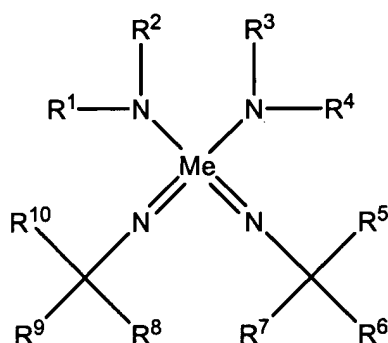
Claim 55 (New): The process of claim 53, wherein the Lewis base comprises pyridine.

Claim 56 (New): The process of claim 52, wherein the second material comprises a hydrogen plasma.

Claim 57 (New): The process of claim 52, wherein the second material comprises at least one hydrogen atom.

Claim 58 (New): The process of claim 50, wherein the substrate is maintained at a temperature in the range of 200 °C to 400 °C.

Claim 59 (New): A compound having a formula



wherein Me is W or Mo, Rⁿ represent alkyl groups, arylalkyl groups, alkenylalkyl groups, alkynylalkyl groups, fluoroalkyl groups or alkyl groups substituted with other atoms or groups selected to enhance the volatility of the compound, where Rⁿ is any one of R¹ through R¹⁰ and the Rⁿ may be the same or different from each other.

Claim 60 (New): The compound of claim 59, wherein Me is W.

Claim 61 (New): The compound of claim 59 wherein R¹ through R¹⁰ are methyl.

Claim 62 (New): The compound of claim 60, wherein Me is W.

Claim 63 (New): An electrically conducting electrode comprising an electrically conductive thin film produced by the process of claim 24.

Claim 64 (New): An electrical capacitor comprising at least one electrically conducting electrode of claim 63.

Claim 65 (New): An electrically conducting electrode comprising an electrically conductive thin film produced by the process of claim 30.

Claim 66 (New): An electrical capacitor comprising at least one electrically conducting electrode of claim 65.

Claim 67 (New): A barrier layer produced by the process of claim 24, wherein the barrier layer comprises a metal diffusion barrier layer in a microelectronic device.

Claim 68 (New): The barrier layer of claim 67 having a thickness from 1 nm to 100 nm.

Claim 69 (New): A barrier layer produced by the process of claim 30, wherein the barrier layer comprises a metal diffusion barrier layer in a microelectronic device.

Claim 70 (New): The barrier layer of claim 69 having a thickness from 1 nm to 100 nm.

Claim 71 (New): A microelectronic device comprising:

- a substrate;
- at least one feature comprising copper; and
- at least one layer of tungsten nitride produced by the process of claim 29, located between the substrate and the at least one feature comprising copper.